Claims:

1 The use of a composition of PKB, its analogues, isoforms, inhibitors, activators and/or the functional equivalents thereof, to regulate glycogen metabolism and/or protein synthesis.

2 The use of a composition of PKB, its analogues, isoforms, inhibitors, activators and/or the functional equivalents thereof, for the manufacture of a medicament to regulate glycogen metabolism and/or protein synthesis.

3 The use as claimed in claim 1, to combat disease states where glycogen metabolism and/or protein synthesis exhibits abnormality.

4 The use as claimed in claim 1, to combat diabetes.

5 The use as claimed in any preceding claim, to combat cancer.

6 The use as claimed in claim 5, wherein the cancer is breast, pancreatic or ovarian cancer.

7 The use as claimed in claim 1, wherein the PKB is PKBα, β or γ, an analogue, isoform, inhibitor, activator *or* a functional equivalent thereof.

8 The use as claimed in claim 1, wherein the PKB, its analogue, isoform, or functional equivalent is modified at one or both of amino acids 308 and 473 by phosphorylation and/or mutation.

9 A composition of PKB, its analogues, isoforms, inhibitors, activators *and~or* the functional equivalents thereof.

10 A peptide having or including the amino acid sequence Arg-Xaa-Arg-Yaa-Zaa-Ser/Thr-Hyd, where Xaa is any amino acid, Yaa and Zaa are any amino acid, and Hyd is a large hydrophobic residue, or a functional equivalent of such a peptide.

11 A peptide as claimed in claim 10, wherein Hyd is Phe or Leu, or a functional equivalent thereof.

12 A peptide as claimed in claim 10, wherein Yaa or Zaa or both are an amino acid other than glycine.

13 A peptide as claimed in claim 10, having the amino acid sequence GRPRTSSFAEG, or a functional equivalent thereof.

14 A method of identifying agents able to influence the activity of GSK3, said method comprising:

a. exposing a test substance to a substrate of GSK3; and
b. detecting whether said substrate has been phosphorylated.

15 A method of identifying agents which influence the activity of PKB, comprising:

a. exposing a test substance to a sample containing PKB, to form a mixture;
b. exposing .said mixture to a peptide as claimed in claim 10; and

c. detecting whether (and, optionally, to what extent) said peptide has been phosphorylated.

16 A method as claimed in claim 14, wherein the extent of phosphorylation of the peptide is determined.

17 A method as claimed in claim 15, wherein the phosphorylation state(s) of one or both of amino acids 308 and 473 on PKB is determined.

18 A method as claimed in claim 14, wherein the test substance is an analogue, isoform~ inhibitor, or activator of PKB.

19 A method as claimed in claim 14, wherein steps a or b (or both) are carried out in the presence of divalent cations and ATP.

20 A method of treatment of the human or non-human animal body, said method comprising administering PKB, its analogues, inhibitors, stimulators or functional equivalents thereof to said body.

21 A method as claimed in claim 20, to combat disease states where glycogen metabolism and/or protein synthesis exhibits abnormality.

22 A method as claimed in claim 20, to combat diabetes.

23 A method as claimed in claim 20, to combat cancer.

24. A method as claimed in claim 23, wherein the cancer is breast, pancreatic or ovarian cancer.

25 A method as claimed in claims 20 wherein the PKB is PKBα, β *or* γ, an analogue, isoform, inhibitor, activator or a functional equivalent thereof.

26 An agent capable of influencing the activity of PKB, its isoforms, analogues and/or functional equivalents, by modifying amino acids 308 and/or 473 by phosphorylation or mutation.

27 A method of determining the ability of a substance to affect the activity or activation of PKB, the method comprising exposing the substance to PKB and phosphatidyl inositol polyphosphate and determining the interaction between PKB and the phosphatidyl inositol polyphosphate.

28 A method of determining the ability of a substance to combat diabetes, cancer, or any disorder which involves irregularity of protein synthesis or glycogen metabolism, the method comprising exposing the substance to PKB and phosphatidyl inositol polyphosphate and determining the interaction between PKB and the phosphatidyl inositol polyphosphate.

29 A method as claimed in claim 27, wherein the interaction between PKB and the phosphatidyl inositol polyphosphate is measured by assessing the phosphorylation state of PKB.

30 A method as claimed in claim 29, wherein the phosphorylation state of PKB at T308 and/or $473 is assessed.

31 A method of identifying activators or inhibitors of GSK3 comprising exposing the substance to be tested

to GSK3 and determining the state of activation of GSK3.

32 A method as claimed in claim 31 wherein the state of activation of GSK3 is determined by assessing its phosphorylation.

33 A method of determining the suitability of a test substance for use in combatting diabetes, cancer, or any disorder which involves irregularity of protein synthesis or glycogen metabolism, the method comprising exposing the substance to be tested to GSK3 and determining the state of activation of GSK3.

34 A method for screening for inhibitors or activators of enzymes that catalyse the phosphorylation of PKB, the method comprising exposing the substance to be tested to

- one *or* more enzymes upstream of PKB;
- PKB; and (optionally)
- nucleoside triphosphate

and determining whether (and optionally to what extent) the PKB has been phosphorylated on T308 *and~or* $473.